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The Effect Of Smoking Hookah And Sigar On Some Blood Parameters In Smokers In The Nineveh Plain/Iraq

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ABSTRACT

given the widespread prevalence of the smoking phenomenon in the Nineveh Plain region, The researcher in this study chose to measure the levels of certain blood variables, which are thought to be crucial indicators of the function and safety of these organs, in order to ascertain the extent of the effect of smoking, in its two forms, cigars and hookahs, on various body organs In the blood serum of a group of adults, the levels of cholesterol, lipoproteins, sugar, urea, cardiac creatinine, and erythrogenic index were determined after they were divided into three groups: nonsmokers (15), cigar smokers (15), and hookah smokers (15).The current study found that cigar and hookah smokers had significantly higher levels of sugar, cholesterol, and lipoprotein in their blood serum than nonsmokers , However, when comparing the amounts of these factors between cigar and hookah smokers, there was no discernible difference, With the exception of the HDA level, a significant decrease in its level was observed in hookah smokers compared to cigar smokers.Also, a significant increase was observed in the levels of MDA , CK-MB and Atherogenic Index , While there was no significant difference in the urea level.

Keyword : Smoking, Lipid profil , MDA , CK-mb ,Atherogenic Index.

تأثير تدخين الشيشة والسيجار على بعض مؤشرات الدم لدى المدخنين في سهل نينوى/العراق

م.د ازهار عباس عاشور

الخلاصة

نظراً لانتشار ظاهرة التدخين في منطقة سهل نينوى بشكل كبير ، ومن اجل التأكد من مدى تأثير التدخين بشقيه السيجار والارجيلة على مختلف أعضاء الجسم فقد اختار الباحث في هذه الدراسة قياس مستويات بعض متغيرات الدم، التي يعتقد أنها مؤشرات حاسمة لوظيفة هذه الأعضاء وسلامتها، وتم تحديد مستويات الكوليسترول والبروتينات الدهنية والسكر واليوريا والكرياتينين القلبي ومؤشر الدم ،من مجموعة اشخاص(60) ، وذلك بعد تقسيمهم إلى ثلاث مجموعات كل مجموعة من (15 فرد) وهم مجموعة الأشخاص غير المدخنين ومجموعة مدخني السيكار ومجموعة مدخني الارجيلة. أظهرت نتائج الدراسة الحالية وجود زيادة معنوية في مستويات السكر والكوليسترول والبروتين الدهنية في مصل دم مدخنين السيكار والارجيلة مقارنة مع غير المدخنين أظهرت نتائج الدراسة الحالية وجود زيادة معنوية في مستويات السكر والكوليسترول والبروتين الدهنية في مصل دم مدخنين السيكار والارجيلة مقارنة مع غير المدخنين ، أظهرت نتائج الدراسة الحالية وجود زيادة معنوية في مستويات السكر والكوليسترول والبروتين الدهنية في مصل دم مدخنين السيكار والارجيلة مقارنة مع غير المدخنين ، بينما لم يظهر فرقا معنويا في مستويات هذه المتغيرات

عند مقارنة مستوياتها مابين مدخني الارجيلة ومدخني السيكار، بأستثناء مستوى HDL اذ لوحظ انخفاضا معنويا في مستواه لدى مدخني الارجيلة مقارنة مع مدخني السيكار. كما لوحظ زيادة معنوية في مستوى MDA لدى المدخني السيكار والارجيلة مقارنة مع غير المدخنين. بينما لم يظهر فرقا معنويا في مستويات كلا من Atherogenises Andex, CK-MB واليوريا ما بين المدخنين ب نوعيه وغير المدخنين

الكلمات المفتاحية: التدخين ، البروتينات الدهنية ، المالوندايالدهايد، الكرياتنين القلبي ،مؤشر الاثيروجنكس ،الارجيلة.

Introduction

The phenomenon of the spread of smoking in the world was and still is one of the sinful phenomena that directly and indirectly affect human health. As smoking in all its forms is one of the most important causes of human infection with many diseases and physiological disorders because the smoke of cigarettes contains toxic substances on the human body. Many studies have shown that tobacco smoke for both cigarettes and hookahs produces a group of about (4800) chemicals, including a number of gaseous components such as carbon monoxide, nitrogen, hydrocarbons and hydrogen cyanide, all of which are toxic gases(1). In another study, it showed that the combustion of tobacco produces approximately (600) harmful and harmful substances to humans, and the damage may be direct and within a short period of time or the damage may appear during a long period of time, as the American Lung Association showed in a report that 69 of these substances that make up sugars cause cancerous tumors for humans (2). Cigar smoke and its toxic substances are one of the most important causes of many diseases, including, chronic lung disease, and cardiovascular disease, which may lead to heart attack or blockage of arteries, and smoking causes many cancerous tumors because tobacco contains radioactive materials, especially lung cancer, also causes premature births and fetal growth deficiency (10) times more than pregnant non-smokers, 10 years lower life expectancy for smokers compared to non-smokers, hair loss, causing and increasing the likelihood of baldness, It also causes many cases of illness and deaths around the world, children, as this study showed that smoking increases the disruption of metabolic processes in the smoker's body and insulin resistance and Batali exposes the smoker to diabetes and obesity (3, 4, 5), Another study also showed that smoking is the main cause of heart disease and atherosclerosis, which is attributed to the harmful effects of the components of cigarettes, especially two basic components, namely tar and constitutes 8% of cigarettes, and gaseous compounds, which constitute 92% of cigarette smoke, damage and changes in hair, including (baldness, hair loss, early graying) and skin, many types of Cancers, including (lung cancer, skin cancer, oral and throat cancer, leukemia and others...), sexual dysfunction, stroke, predisposition to type 2 diabetes, and the latest global

statistics have shown that there are (equivalent to 1.1 billion smokers in the world) (6, 7, 8).

Another form of smoking is the use of shisha and addiction to it. Hookah is known by different names such as hookah, hubble telescope and hookah and smokes widely in Middle Eastern countries and has recently begun to spread to European countries and the United States of America,(ALrziman,...et al ,2011).

The hookah is a pipe tool that contains a bottle of water with many flavors added to it, as tobacco smokes in another way through its passage through this bottle, and tobacco is heated using charcoal or wood embers, usually there are hookah in several types of flavors, including grape flavor, chewing gum, peanut butter, manco, Banan, apple , and others (9,13) ,One of the most important reasons that led to the large spread of hookah smoking is the mistaken belief of most people, especially young people, that hookah is less harmful to the health of the body than cigar, also and the presence of hookah with many flavors of smoking made young people more popular with it (14).

At the present time, smoking shisha is a global threat similar to a dangerous epidemic to health, because it contains toxic substances, including 400 substances harmful to health, and that 69 of these components are considered carcinogens, and this study has shown that smoking hookah for women causes a decrease in the weight of the infant and also causes increased heartbeat, diabetes, lung cancer and pancreas for women, (Aslam...etal,2014). In general, many global studies have found that the health damage of hookah can not be less in any way than the harms of cigarettes, many studies have proven that smoking hookah is the main cause of diseases and poisoning with carbon monoxide, high blood pressure and gum disease, in addition to being the main cause of many cancerous tumors, including cancer, (Selim..et al ,2013 , Kadhum ...et al,2015).

Many studies have shown that both alcohol smoke and hookah contain the same compounds and toxic substances found in tobacco, so the hookah causes the same damage resulting from smoking cigars for the possibility of heart disease, respiratory infections and lung inflammation, as well as the possibility of various cancers, as it can be said that due to the long time periods of smoking shisha, which may take (30-90) minutes compared to the time period for smoking cigars (4-6) minutes, which increases the number of whiffs per minute, the smoker of shisha is more exposed and inhaled to toxic substances of tobacco and therefore more susceptible to disease,

(Sandhu S.V. & Babu N.C. 2010 , Qasim et al… 2019)

The current study aimed to show the mechanism by which the various toxic elements and compounds of cigarette smoke affect the various vital body systems of humans by measuring some blood variables in smokers and comparing them with these variables for non-smokers, and observing the changes that occur in them, through which the causes of physiological disorders and diseases of smokers can be understood.

Materials and methods.

A. Study samples.

The current study included a group of male persons (60) aged between (24-35) years, from the Nineveh Plains region, they were divided into three basic groups, each group consists of 20 people, the first group represents non-smoking males, the second group is males who smoke cigars (an average of 20 cigarettes and above per day), and the third group is male smokers Hookah(Shisha rate per day), Keeping in mind that the period of time he smokes (one year and above).

After that, we asked each person under trial to fill out a data form, which included a set of questions and his medical history, including (age, does he smoke or not, his health condition, his freedom from chronic diseases, and now the type of smoking, the number of years of smoking, etc.....). Then the blood pressure and oxygen percentage in the lung were measured using special measuring devices to ensure the initial safety of the heart and lungs for each group, After filling out the personal data form and the initial examination for each member of the three groups, the following categories were excluded from the experiment, namely (people with chronic diseases such as cardiovascular diseases, chronic blood pressure, diabetics of both kinds, and people with inflammatory diseases, People who smoked both cigars and hookah were also excluded, as were those who smoked intermittently and irregularly and smoked for less than one year.

Information form		
Seq.	required information	Answers
1	the name	
2	the age\	
3	Profession	
4	Do you smoke cigars?	Yes or No
5	How long have you been smoking?	Less than one year More than one year More than

		five years
6	The number of cigarettes you smoke per day.	
7	Do you smoke hookah?	Yes or No
8	How long have you been smoking hookah?	Less than one year More than one year More than five years
9	Do you smoke both types of cigarettes and hookah?	Yes or No
10	Do you have any chronic diseases and what are they?	
11	You have respiratory problems or shortness of breath	Yes or No
12	Have you been infected with Corona disease?	Yes or No
13	have problems sleeping.	

B. Blood Samples.

10 ml of venous blood was drawn using sterile syringes from people fasting for a period of 10 hours, then the samples were placed in sterile test tubes and centrifuged at a speed of)3500 rpm (for ten minutes to obtain the serum, which was kept in the refrigerator at 4°C until the tests were conducted.

C. Biochemical tests.

After taking serum samples, some blood variables including (glucose, cholesterol, TG, HDL, LDL, VLDL, CK-MB, cTnI, Urea Blood, and myoglobin) were measured using different laboratory tests.

1.Level of Glucose in Serum.

The concentration of glucose in th blood was measured using the Kit Randox, which is a colorimetric enzymatic method based on the colorimetric reaction of glucose with the reagents, which was measured using a spectrophotometer at a wavelength of 546 nm.

2. Serum Urea level.

Measurement of blood urea level using Randox Kit, which is a colorimetric enzymatic method based on the reaction of blood urea with Kit reagents to form a color product that can be measured using a spectrophotometer at 450 nm.

3. Serum lipoproteins and cholesterol levels .

The colorimetric method was used to measure the levels of total cholesterol, TG, HDL and LDL by using a kit from Randomex company, and its wavelengths were measured using a spectrophotometer, then the concentrations of these lipoproteins were calculated according to the equation mentioned from Friedewald , and the level of VLDL in blood serum was also extracted Using the equation (VLDL=TG concentration/5) , (Friedwald WT, 1972).

4. Creatine kinase and Atherogenic Index levels in blood serum.

The levels of cardiac creatine phosphokinase and Atherogenic Index in blood serum were measured using a quantitative immunoassay method by reagents kit the Dutch company Biosex. The levels of CK-MB and Atherogenic Index were then measured using the sophisticated immunoassay device DCR 1000 .

5. Serum MDA Level.

The serum lipid peroxide level was calculated using the method developed by the researchers (Lovri et al, 2008), which is based on the principle of measuring the level of malondaildehyde (MDA) which is the final product of the reaction of lipid peroxides with TBA acid. The reagents for the process, which contain a 17.5% solution of trichloroacetic acid (TCA), are first prepared. 0.6% theobarbituric acid solution (TBA), followed by 70% trichloroacetic acid solution. After that, mix 150 µl of serum with 1 ml of TBA acid and then add (1 ml) of TCA acid prepared at a concentration of 30.6%, as it is placed in a water bath(70°C) for 15 minutes to complete the reaction, then cool down and finally add 1 ml of TCA at a concentration of 70%. After that, it is cooled and centrifuged for 10 minutes at (300 rpm). The precipitate is removed, the filtrate is collected, and the wavelength of the MDA compound at 535 nm is estimated using a spectrophotometer. The MDA concentration is then determined using the equation.

The concentration of Malondialdehyde (µmol/l)= (ATES-BLANK)/(Eo×L) D*106

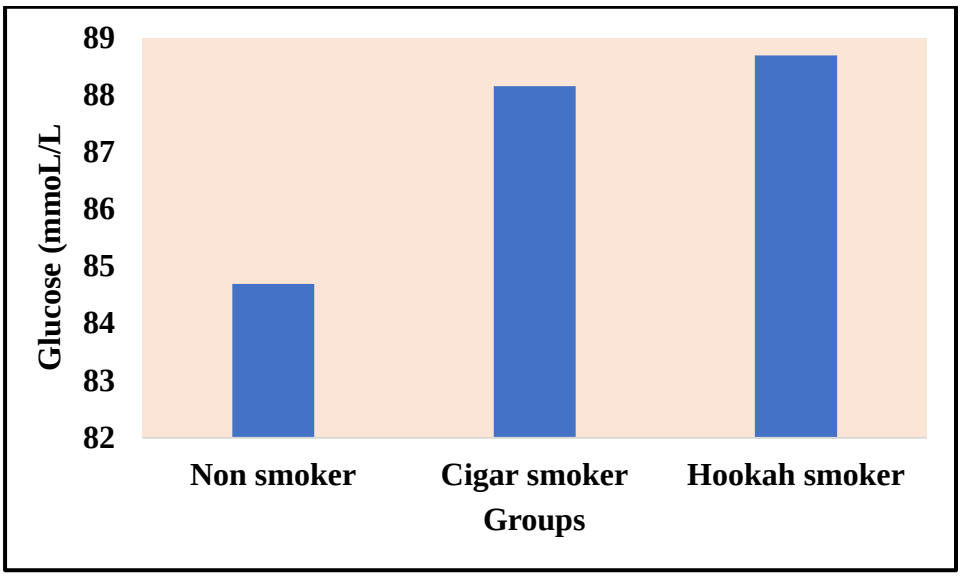
Eo =Extinction coefficient 1.56 x 105 M-1 cm-1

L = light bath 1 , D = dilution factor 6.7

The Results

The effect of smoking on glucose levels in the blood serum of males.

The results of the current study showed that there was a significant increase in the level of glucose in the blood serum of cigarette smokers (88.1538±8.8114) compared to its level in the blood serum of non-smokers (84.4667±11.147), while the increase was not significant in the level of glucose in hookah smokers (89.333±6.9667) in comparison. With its level in non-smoking males at P≥0.01.



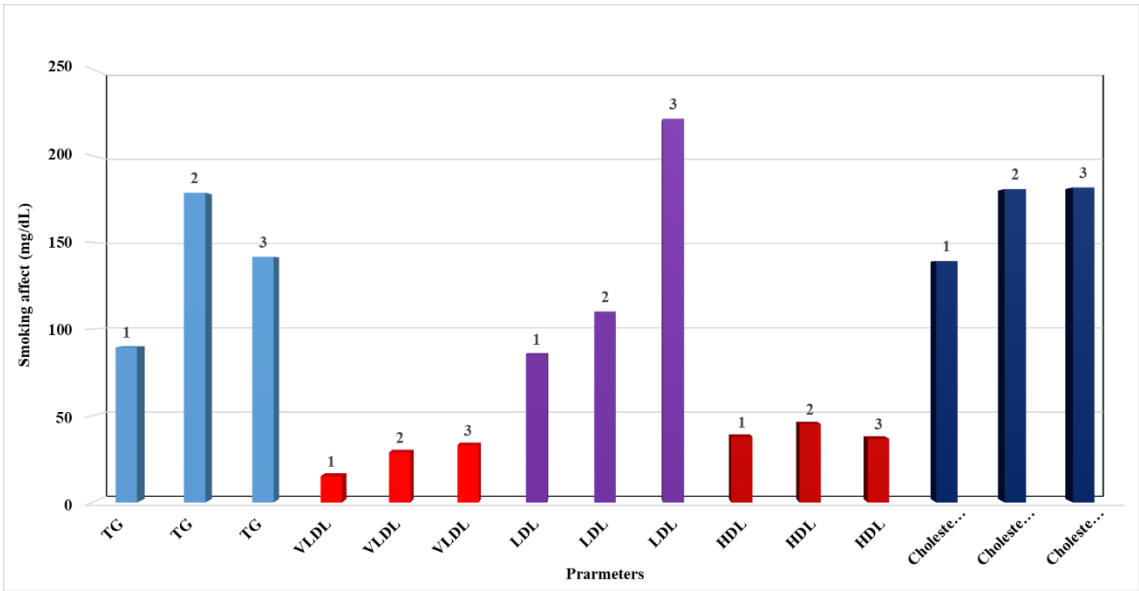
The effect of smoking on the level of cholesterol and lipoprotein levels in blood serum.

The results of the current study showed a significant increase in the level of cholesterol in the blood serum of cigar smokers (180.7692±28.48436) compared to its level in the blood serum of non-smokers (139.200±31.28030). Also, a significant increase in the cholesterol level was observed in hookah smokers (181.6667±28.35657) compared to Its level in non-smoking males is at P≥0.01.

The results of the current study showed a significant increase in the levels of both LDL (106.2308±10.81013) and VLDL (28.8462±13.84947) in the blood serum of cigar smokers, compared to their levels of LDL (87.2000±23.96784) and VLDL (15.1333±7.4915), respectively, while There was a non-significant increase in the level of TG in the blood serum of cigarette smokers (82.3077±36.23393) compared to its level in the blood serum of non-smokers (64.1333±22.57010), while a significant decrease was observed in the level of HDL lipoprotein in the blood

serum of cigarette smokers (45.2308±6.8453).) compared to non-smoking people (37.8667±5.95059). The current study also showed a significant increase in the levels of both LDL (100.7333± 13.87427) and VLDL (33.0000± 9.18850) in the blood serum of hookah smokers, compared to their levels in the blood serum of non-smokers.

(87.2000±23.96784) and (15.1333±7.4915), respectively. A significant increase in the level of TG was also observed in the blood serum of hookah smokers (120.7333±40.37231) compared to non-smokers (64.1333±22.57010). While there was no significant difference in the level of HDL between people who smoked hookah (36.7333±5.2978) and people who did not smoke (37.8667±5.95059) at p≤0.01.



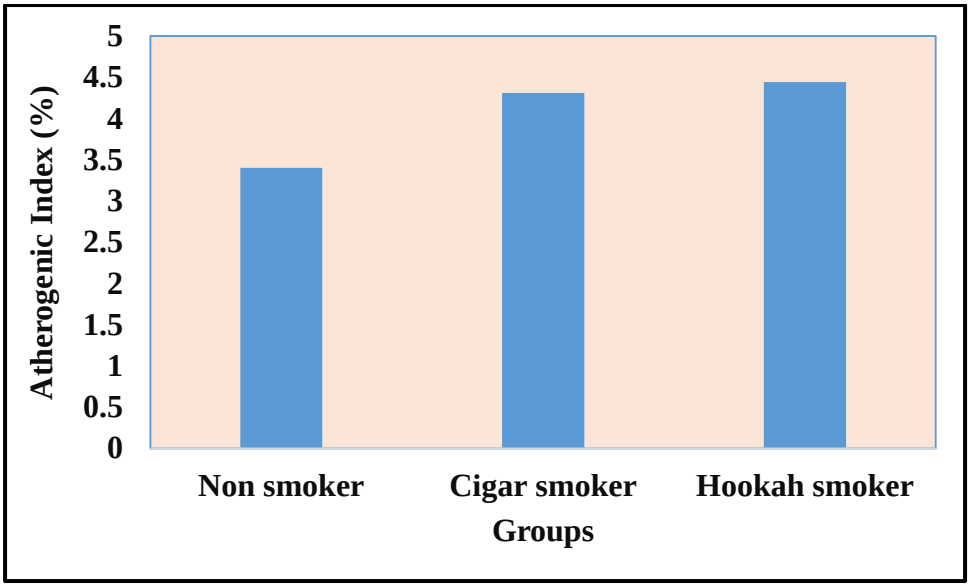
The effect of smoking on the level of malondadehyde (MDA) in blood serum.

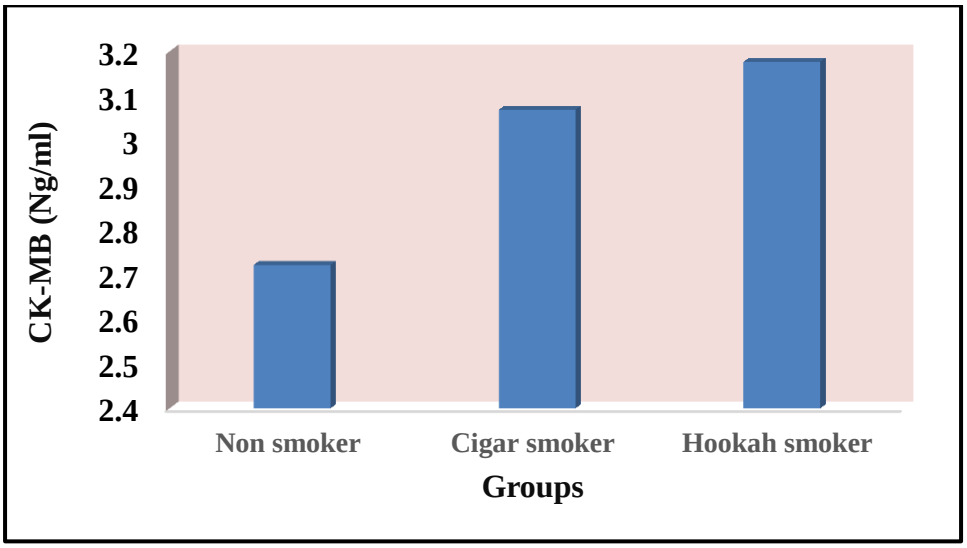
The results of the current study showed a significant increase in the levels of MDA in the blood serum of both cigar smokers (5.701±0.274) and hookah smokers (5.283±0.291) compared to its level in the serum of non-smokers (2.962±0.215) at a significance level of P ≤ 0.01, while no significant difference was observed in its level when compared , Between cigar smokers and hookah smokers.

The effect of smoking on the level of CK-MB and Atherogenic Index in blood serum.

The results of the current study showed a significant increase in the levels of both CK-MB and the Atherogenic Index, respectively, in the blood serum of cigar and hookah smokers (3.0692±0.87914), (6.3533±8.4468), compared to their levels in the blood serum of non-smokers (2.2067 ±5.76200), while the increase was not

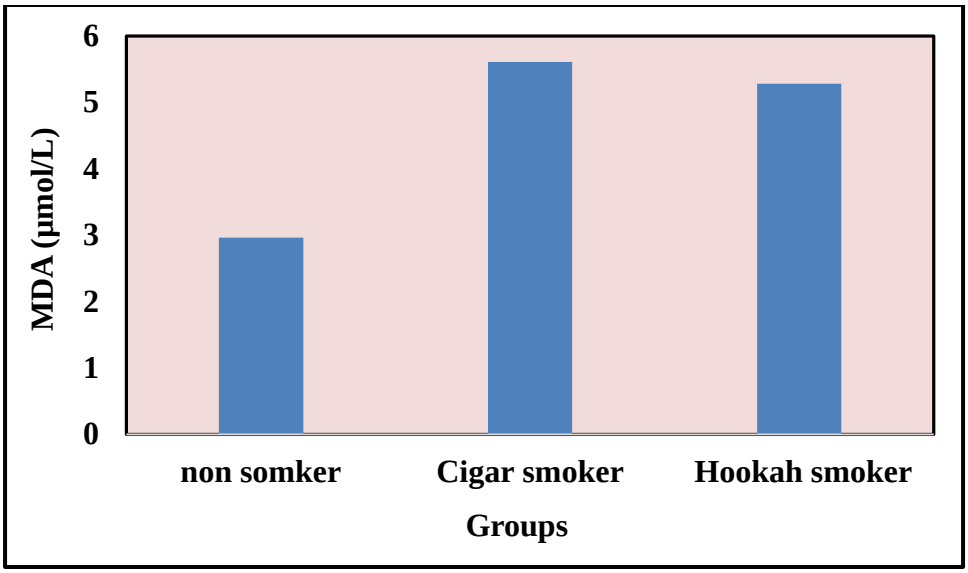
significant in their levels, respectively, in smokers. Hookah (), () compared to non-smokers. Also, there was no significant difference in the levels of CK-MB and the Atherogenic Index between cigar smokers and hookah smokers at a significance of P≤0.01. As shown in table ()





The effect of smoking on the level of MDA.

The results of the current study showed a significant increase in MDA levels in the blood serum of both cigar smokers (5.701±0.274) and hookah smokers (5.283±0.291) compared to its level in the serum of non-smokers (2.962±0.215) at a significant level of P ≤ 0.01, while no It is noted that there is a significant difference in its level when comparing cigar smokers and hookah smokers.



The effect of smoking on the level of Urea

The results of the current study showed that there is no significant difference in the level of blood urea in people who smoke cigars (40.6923±8.81651) and hookah compared to people who do not smoke (34.1067±9.87923) at a significance level of ≥p 0.01. As shown in the table( )

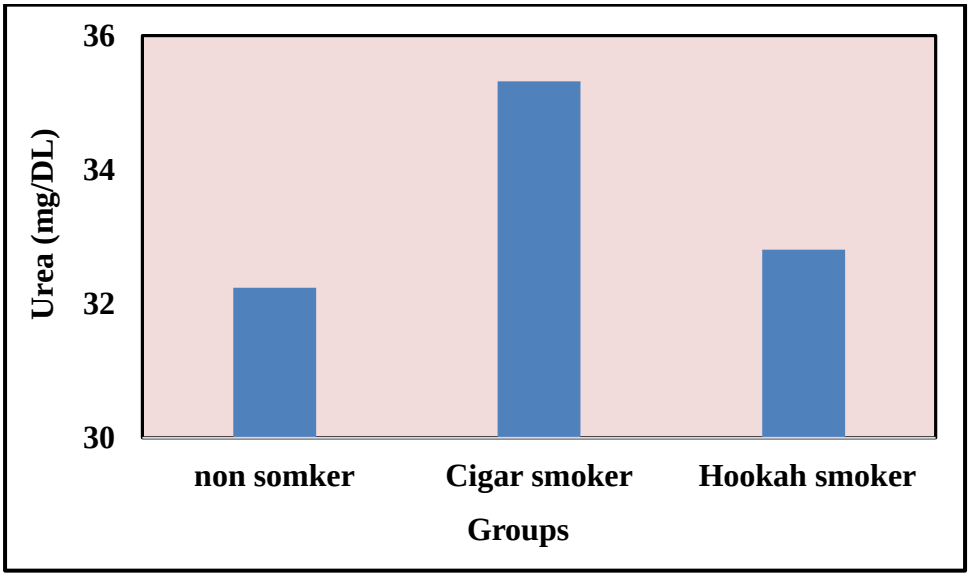


Table No. () shows the level of urea in the blood of non-smokers and cigar and hookah smokers.

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